REMARKS

Claims 1 and 3-7 and 9-11 are pending in this application. Applicants respectfully request withdrawal of the outstanding rejections and allowance of the application in view of the following remarks, as well as those previously presented.

As a preliminary matter, claim 1 is amended herein to state explicitly that the "mixture" that is subject to heat treatment in the claims, is a pre-crystallization mixture. Applicants believe this requirement was previously implicit in the claims and does not narrow the claims or add any new matter thereto. This recitation is added to the claims herein for clarity.

Claim 1 is also amended herein to explicitly provide that the claimed methods result in the perovskite-type composite oxide containing a noble metal supported on theta-alumina and/or alpha-alumina, and does not include adding further noble metal to said theta-alumina and/or alpha-alumina. Support for this amendment may be found for example, in the examples of the specification, in which the pre-crystallization composition of the perovskite-type composite oxide containing a noble metal is mixed with alumina and baked thereafter. (See *e.g.*, Examples QA-1 – QA-7-2, at pages 53-66 of the specification).

Request for Continued Examination

Applicants thank the Examiner for accepting the Request for Continued Examination and entering the Amendments filed on December 4, 2008.

Rejections Under 35 U.S.C. § 103

Claims 1, 3-5 and 9-11 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Yoshiyuki et al. (JP 63-302950) in view of Kaneko et al. (U.S. Patent Application Publication No. 2001/0053467) and Noguchi et al. (U.S. Patent No. 4,237,030). Claims 6-7 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Yoshiyuki, Kaneko and Noguchi as applied to claim 1, and further in view of JP 11-262663 ("JP '663"). Applicants traverse this rejection and respectfully request reconsideration and withdrawal thereof and allowance of the claims, in view of at least the below comments.

In particular, applicants respectfully submit that one skilled in the art would not be motivated to substitute the composite oxide containing a noble metal of Kaneko for the perovskite-type composite oxide of Yoshiyuki, and even if such a substitution was made, one would not arrive at the presently claimed methods, which result in a superior catalyst.

As indicated previously, in the methods of the present invention, a pre-crystallization composition containing elementary components constituting a perovskite-type composite oxide containing a noble metal is mixed with alumina, and the mixture thus obtained is baked (note: "subjecting the mixture to heat treatment" (*emphasis added*), as recited in Claims 1, 8, and 12). As a result, the catalyst thus produced has noble metals that are supported on the perovskite-type composite oxide only. Thus, the noble metals exist in the crystal structure of the perovskite-type composite oxide.

In the producing method of the present invention, the noble metal is contained, not in the alumina, but in the perovskite-type composite oxide. That is, the noble metal exists only in the

perovskite structure. When the noble metal is contained in the perovskite-type composite oxide, it exhibits more activity than when it is supported on the alumina.

Yoshiyuki describes that activated alumina powder containing a perovskite-type composite oxide is obtained first, applied to a monolith support and baked. As indicated previously, Applicants submit that Yoshiyuki does not render the present claims obvious, at least because Yoshiyuki does not include a noble metal as part of a mixture of a pre-crystallization composition of elementary components including a perovskite-type composite oxide containing a noble metal, and a powder of theta-alumina and/or alpha-alumina, as required by the present claims.

The Examiner's position appears to be that one would allegedly be motivated to substitute the perovskite-type composite oxide of Kaneko for that of Yoshiyuki, which would purportedly result in noble metals being supported on the perovskite-type composite oxide. However, Applicants respectfully submit that one skilled in the art would not be motivated to substitute the composite oxide containing a noble metal of Kaneko for the perovskite-type composite oxide of Yoshiyuki.

Both Yoshiyuki and Kaneko mention a perovskite-type composite oxide having a noble metal, however their purposes are very different and therefore, for at least this reason, Applicants submit that one would not be motivated to simply substitute one oxide for the other. The invention of Yoshiyuki is for use in purifying exhaust gas of a motor vehicle. The examples of the noble metals in Yoshiyuki include Pt, Rh, and Pd. In contrast, Kaneko discloses a reforming catalyst of hydrocarbon-based fuel or alcohol-based fuel, or an electrode catalyst for a solid

oxide electrolyte fuel cell. The noble metals disclosed in Kaneko include Ru and Rh alone. Kaneko has a technical feature of incorporating the noble metals into the composite oxide having ionic conductivity.

The exhaust gas catalyst (as in Yoshiyuki) has a gas phase reaction on the surface of its carrier (honeycomb structure) in a high-temperature range, usually 800° C or more, and the active component thereof is mostly the noble metals. In comparison, the main purpose of the electrode catalyst (as in Kaneko) is to operate at a low temperature, and the electrode catalyst starts its operation approximately at 400° C in the example of Kaneko. In addition, the noble metals, such as Ru and Rh contribute to valence control of the element in the B site.

Consequently, Applicants respectfully submit that it would be difficult for a person of ordinary skill in the art to combine Yoshiyuki and Kaneko based on an analogy of oxides, because the function and purpose of the exhaust gas purification and electrode catalyst are significantly different from one another.

Even if one did combine the references, however, Applicants submit that one would not arrive at the present invention. In particular, it is clear from the present specification, and is now specifically recited in the claims, that the present methods result in a perovskite-type composite oxide containing a noble metal, supported on theta-alumina and/or alpha-alumina, in which noble metal exists only in the perovskite structure. As indicated above, the claims are amended herein to explicitly recite that the present methods do not include adding further noble metal to said theta-alumina and/or alpha-alumina. Thus, in view of this amendment and as explained further

below the present claims are clearly distinguishable from the methods of Yoshiyuki, which include adding noble metal on the alumina.

The purpose of having the noble metal exist only in the perovskite structure in the methods of the present invention is to develop self-regeneration function in which the noble metal in the perovskite-type composite oxide alternates solid solution state and deposition state in accordance with the change of oxidation/reduction atmosphere. Noble metal on the alumina (as in Yoshiyuki) does not have such self-regeneration function, which causes performance degradation due to the flocculated and enlarged alumina with the lapse of time. Therefore, the technical idea of the present invention is fundamentally different from Yoshiyuki, and there is a significant difference between their performances.

Furthermore, in the exhaust gas purifying catalyst obtained in the present invention, the noble metal is concentratedly supported on the perovskite-type composite oxide supported on the alumina. As a result, purification performance of catalysts resulting from the present methods, is improved in comparison to Yoshiyuki where the noble metal is supported on both alumina and perovskite-type composite oxide, when the amount of the noble metal is the same in both Yoshiyuki and the present invention.

Thus, the catalysts produced by the presently claimed methods, are advantageous in developing an excellent purification performance, using a less amount of noble metal (lower cost) than that of Yoshiyuki.

For at least the reasons herein and as stated previously, Applicants respectfully submit that the present claims are unobvious over the references and the allowance of the claims is respectfully requested.

If the Examiner believes that there is any issue which could be resolved by a telephone or personal interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

Applicants hereby petition for any extension of time that may be required to maintain the pendency of this case, and any required fee for such an extension is to be charged to Deposit Account No. 50-0951.

Respectfully submitted,

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